

Appl. No. 10/032,082
Amdt. Dated Mar. 23, 2004
Reply to Office action of February 6, 2004

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claim 1 (currently amended): A variable optic attenuator comprising:

a chassis defining a channel extending in a first direction;

an attenuating device movably received in the channel, the attenuating device comprising a filter having a density varying from a low density region to a high density region in a filter moving direction that is substantially parallel to the first direction;

a driving unit mechanically coupled to the attenuating device for reciprocally moving the filter in the filter moving direction;

a mount attached to the chassis, the mount forming first and second primary bores extending parallel to the first direction and located on opposite sides of the channel, and a passage extending across the channel in a second direction perpendicular to the first direction and intersecting the first and second primary bores, the mount forming first and second flat surfaces at the ~~intersection~~ intersections of the passage with the first and second primary bores, the surfaces being 45 degree inclined with respect to the first direction and perpendicular to each other, and first and second reflectors being attached to the first and second flat surfaces of the mount;

wherein the filter is located in the passage and thus between the reflectors, and the movement of the filter by the driving unit ~~bring~~ brings different regions of the filter to the passage; and

Appl. No. 10/032,082

Amdt. Dated Mar. 23, 2004

Reply to Office action of February 6, 2004

~~wherein~~ the first and second primary bores are adapted to receive and retain ends of an input optic fiber and an output optic fiber, and an optic signal transmitted through the input optic fiber is incident to the first reflector through the first primary bore and is then ~~reflect~~-reflected to pass through the filter along the passage toward the second reflector which reflects the signal to the output optic fiber through the second primary bore thereby forming a U-shaped optic path between the input and output optic fibers.

Claim 2 (currently amended): The variable optic attenuator as claimed in Claim 1, wherein the attenuating device comprises a carrier to which the filter is attached, and ~~wherein~~ the driving unit comprises an electric motor drivingly coupled to the carrier for reciprocating the filter in the filter moving direction.

Claim 3 (original): The variable optic attenuator as claimed in Claim 2, wherein the coupling between the motor and the carrier comprises a threaded shaft rotated by the motor and an inner threading formed in the carrier, a threading engagement being formed between the threaded shaft and the threading of the carrier.

Claim 4 (original): The variable optic attenuator as claimed in Claim 2, wherein the driving unit comprises electric control means comprising a variable resistor, a conductive member being attached to the carrier to be movable therewith, the conductive member having a spring arm physically engaging the variable resistor to generate a feedback signal to the electric control means.

Claim 5 (original): The variable optic attenuator as claimed in Claim 2, wherein the carrier defines a guide groove slidably and receivingly engaging a guide rail formed inside the channel of the chassis.

Appl. No. 10/032,082
Amdt. Dated Mar. 23, 2004
Reply to Office action of February 6, 2004

Claim 6 (currently amended): The variable optic attenuator as claimed in Claim 1, wherein the chassis forms platforms on opposite sides of the channel for supporting the mount, with the first and second primary bores of the mount located on opposite sides of the channel.

Claim 7 (original): The variable optic attenuator claimed in Claim 4, wherein the electric motor is a stepping motor in connection with the electric control means, the feedback signal being fed to the electric control means for controlling the stepping motor.

Claim 8 (currently amended): The variable optic attenuator as claimed in Claim 1, wherein the reflectors comprise mirrors attached to the flat surfaces by ~~adhesives~~ adhesive.

Claim 9 (original): A variable optic attenuator comprising:

an attenuating device comprising a filter movable in a longitudinal direction;

an electric control unit drivingly coupled to the attenuating device for reciprocally moving the filter in the longitudinal direction; and

an optic module comprising a mount having two reference surfaces perpendicular to each other, two reflectors securely attached to the reference surfaces, the mount further defining two parallel primary bores adapted to receive and retain input and output optic fibers in precise alignment with the reflectors, a passage being formed between the reflectors and extending in a lateral direction not parallel to the primary direction and through the filter whereby the primary bores, the reflectors and the passage form a substantially U-shaped optic path between the input and output fibers.

Claim 10 (currently amended): The variable optic attenuator as claimed in

Appl. No. 10/032,082
Amdt. Dated Mar. 23, 2004
Reply to Office action of February 6, 2004

Claim 9, wherein the attenuating device comprises a carrier to which the filter is attached, and ~~wherein~~ the electric control unit comprises a stepping motor drivingly coupled to the carrier for moving the filter in the longitudinal direction.

Claim 11 (original): The variable optic attenuator as claimed in Claim 10, wherein the stepping motor comprises a threaded output shaft extending in the primary direction and threadingly engaging with an inner threading of the carrier for moving the carrier and the filter in the longitudinal direction.

Claim 12 (currently amended): The variable optic attenuator as claimed in Claim 9, wherein the electric control unit comprises a variable electric resistor, and ~~wherein~~ the attenuating device comprises a slider electrically and movably engaging the variable electric resistor for generating a feedback signal to control the stepping motor.

Claim 13 (previously amended): The variable optic attenuator as claimed in Claim 10, wherein the optic module has a wall to which the motor is attached, a through hole being defined in the wall for extension of the threaded shaft of the motor.

Claim 14 (currently amended): The variable optic attenuator as claimed in Claim 9, wherein the attenuating device forms a guiding groove, and ~~wherein~~ the optic module comprises a guide rail movably received in the guiding groove for guiding the reciprocal movement of the attenuating device.

Claim 15 (original): The variable optic attenuator as claimed in Claim 9, wherein the optic module comprises first and second platforms for supporting the mount.

Appl. No. 10/032,082
Amdt. Dated Mar. 23, 2004
Reply to Office action of February 6, 2004

Claim 16 (currently amended): The variable optic attenuator as claimed in Claim 9, wherein the mount defines a channel between the primary bores, with the attenuating device movably received in the channel.

Claim 17 (original): The variable optic attenuator as claimed in Claim 16, wherein the passage consists of first and second secondary bores defined in the mount, aligned with each other and respectively located on opposite sides of the channel.

Claim 18 (original): The variable optic attenuator as claimed in Claim 9, wherein the reference surfaces are 45 degree inclined with respect to the primary bores and the passage.

Claim 19 (currently amended): The variable optic attenuator as claimed in Claim 9, wherein the reflectors comprise mirrors attached to the reference surfaces by ~~adhesives~~ adhesive.

Claim 20 (currently amended): An optic module comprising:

a chassis;

a mount disposed in a portion of said chassis, said mount defining parallel first and second primary bores extending along a first direction with a channel ~~therebetween~~ therebetween, a passage extending ~~eross~~ across the channel in a second direction perpendicular to said first direction and intersecting the first and second primary bores, a pair of reflectors respectively located at ~~an intersection~~ intersections of the first and the second primary ~~bore-bores~~ and the passage, each of said reflectors facing to the corresponding primary bore and the passage at forty five degrees;

a pair of collimators being received in the corresponding primary bores,

Appl. No. 10/032,082
Amdt. Dated Mar. 23, 2004
Reply to Office action of February 6, 2004

respectively, ~~and~~ a front end of each of said collimators, which is close to the corresponding ~~reflectors~~reflector, being hidden in the mount;

a carrier movably mounted in the other portion of said chassis along said first direction, said carrier bringing a filter intersecting said passage; and

an electrical resistor disposed in the chassis and engaged with a slider which moves along with the carrier and ~~produce~~produces a signal to control the movement of the carrier.